IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellants:	Arnab DAS et al.
Application No.:	10/036,927
Art Unit:	2616
Filed:	October 19, 2001
Examiner:	Mohammad Sajid Adhami
For:	AN ADAPTIVE HYBRID RETRANSMISSION METHOD FOR WIRELESS COMMUNICATIONS
Attorney Docket No.:	129250-002148/US

APPLICANT'S BRIEF ON APPEAL

MAIL STOP APPEAL BRIEF - PATENTS
Customer Service Window   June 6, 2006
Randolph Building
401 Dulany Street
Alexandria, VA 22314

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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

I.   REAL PARTY IN INTEREST:

The real party in interest in this appeal is Lucent Technologies Inc. Assignment of the application was submitted to the U.S. Patent and Trademark Office and recorded at Reel 012777, Frame 0552.

II.   RELATED APPEALS AND INTERFERENCES:

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III.   EVIDENCE SUBMITTED UNDER CFR 1.130, 1.131, OR 1.132:

None.

IV.   DECISIONS RENDERED BY THE COURT OR THE BOARD IN RELATED APPEALS AND INTERFERENCES SECTION:

None.

V.   STATUS OF CLAIMS:

Claims 1-20 are pending in the application, with claims 1, 14, 15 and 17 being written in independent form.

Claims 1-13 and 20 remain finally rejected under 35 U.S.C. §102(b) while claims 14-19 remain finally rejected under 35 U.S.C. §103(a). Claims 1-20 are being appealed.

VI.   STATUS OF AMENDMENTS:

A Request for Reconsideration ("Request") was filed on March 13, 2006. In an Advisory Action dated April 10, 2006, the Examiner stated that the

Request was considered but did not place the application in condition for allowance.

VII. SUMMARY OF CLAIMED SUBJECT MATTER:

Overview of the Subject Matter of the Independent Claims

The present invention is directed at adaptive, Hybrid ARQ methods for retransmitting information in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames each divided into a plurality of time slots of equal duration. More specifically, one method comprises transmitting a code multiplexed retransmission of a previous transmission within one of the fixed length frames using one or more of a plurality of codes, wherein the number of codes used for the retransmission is variable based on the condition of the communication channel.

As such, the adaptive Hybrid ARQ methods of the present invention can use different modulation, different coding, and a different number of codes for retransmissions than is used in an original transmission, but still use fixed length frames in doing so. Consequently, problems associated with variable length transmissions are avoided. Keeping fixed length frames also ensures easy migration to future versions of third generation (3G) wireless systems. (see specification p. 3,lines 5-25; p.5, line 5- p.7, line 14 and Figures 1-3 (Appendices B-D)

VIII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

Appellants seek the Board's review and reversal of the rejection of claims 1-13 and 20 under 35 U.S.C. §102(e) and the rejection of claims 14-19 under 35 U.S.C. §103(a).

IX.   ARGUMENTS:

A.)   The Section 102 Rejections

Claims 1-13 and 20 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application No. 10/184,022 to Kwan ("Kwan"). Applicants respectfully disagree for at least the following reasons.

Claims 1-13 and 20 are directed at a method for retransmitting information which includes, among other things, transmitting a code multiplexed retransmission of a previous transmission...wherein the number of codes used for the retransmission is variable based on the condition of a communication channel.

Kwan does not disclose or suggest such a retransmission method. On page 7, in the "Response to Arguments" section of the Final Office Action, the Examiner refers the Applicants to paragraph 146 of Kwan and further states that Kwan's "method of transmission...could easily be used as a method of retransmission."

Applicants have read the excerpt from Kwan referred to by the Examiner. In the excerpt, Kwan sets forth a general statement of the known retransmission scheme presently used in the HSDPA protocol. There is no discussion of a retransmission scheme other than this general statement, let alone a disclosure or suggestion of a retransmission method that includes transmitting a code multiplexed retransmission of a previous transmission...wherein the number of codes used for the retransmission is variable based on the condition of a communication channel, as set forth in the claims of the present invention.

B.)   The Section 103 Rejections

Claims 14-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kwan in view of U.S. Patent No. 6,366,568 to Bolgiano ("Bolgiano"). Applicants respectfully disagree for at least the following reasons.

Each of these claims include, among other things, the feature of (in a fixed length frame) sending a fixed duration retransmission of a previous transmission in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain. As indicated above, Kwan appears to only set forth a general statement of the known retransmission scheme presently used in the HSDPA protocol; it does not disclose or suggest fixed duration retransmissions of previous transmissions in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain, as in claims 14-19. Nor does Bolgiano make up for the deficiencies of Kwan.

X.   CONCLUSION:

Appellants respectfully request that members of the Board reverse the decision of the Examiner and allow claims 1-20.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3777 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

XI. EVIDENCE APPENDIX

None.

XII. RELATED PROCEEDINGS APPENDIX

None.

Respectfully submitted,

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APPENDIX A

CLAIMS APPENDIX

1.   (Original)   A method for retransmitting information in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames each divided into a plurality of time slots of equal duration, the method comprising:

transmitting a code multiplexed retransmission of a previous transmission within one of the fixed length frames using one or more of a plurality of codes, wherein the number of codes used for the retransmission is variable based on the condition of the communication channel.

2.   (Original)   The method according to claim 1, wherein redundancy contained within the retransmission is a function of the number of codes used for the transmission.

3.   (Original)   The method according to claim 1, wherein the condition of the communication channel is determined by at least one of the factors selected from the group consisting of quality-based parameters and available resources within the communication channel.

4.   (Original)   The method according to claim 1, wherein each of the fixed length frames is capable of transmitting a combination of one or more signal transmissions selected from the group consisting of new transmissions and retransmissions of previous transmissions.

5.   (Original)   The method according to claim 1, wherein the number of codes is the same for a first transmission and a subsequent corresponding retransmission of the first transmission.

6.   (Original)   The method according to claim 1, wherein the number of codes used for a first transmission is different than the number of codes used for a subsequent corresponding retransmission of the first transmission.

7.   (Original)   The method according to claim 1, wherein a fixed length frame is capable of carrying multiple simultaneous transmissions by using one or more different codes for each of the multiple simultaneous transmissions.

8.   (Original)   The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of first transmissions from different users.

9.   (Original)   The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of retransmissions of previous transmissions from different users.

10.   (Original)   The method according to claim 7, wherein the multiple simultaneous transmissions include a plurality of retransmissions of previous transmissions from the same user.

11.   (Previously Presented)   The method according to claim 7, wherein the multiple simultaneous transmissions include first transmission and one or more retransmissions from the same user.

12.   (Original)   The method according to claim 7, wherein the multiple simultaneous transmissions include one or more first transmissions from one or more users and one or more retransmissions of previous transmissions from the one or more users.

13.   (Original)   The method according to claim 1, wherein the fixed length frames have a duration of 2 milliseconds and each of the plurality of time slots has a duration of .67 milliseconds.

14.   (Original)   A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:

in a fixed length frame, sending a fixed duration retransmission of a previous transmission in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain,

wherein the number of resources selected from the group consisting of codes, frequencies, and antennas that are used for the retransmission is variable.

15. (Previously Presented) A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:

in a fixed length frame, sending a fixed duration retransmission of a previous transmission in a domain selected from the group consisting of a code domain, a frequency domain, and a space domain,

wherein a transmission format associated with the domain used for the retransmission is variable.

16. (Original) The method according to claim 15, wherein the transmission format in the code domain is defined by parameters including number of codes, modulation, and coding, wherein the transmission format in the frequency domain is defined by parameters including number of frequencies, number of codes, modulation, and coding, and wherein the transmission format in the space domain is defined by parameters including number of antennas, number of codes, modulation, and coding.

17. (Original) A method for providing adaptive incremental redundancy in a communication channel of a wireless communication system, the communication channel including a plurality of fixed length frames, the method comprising:
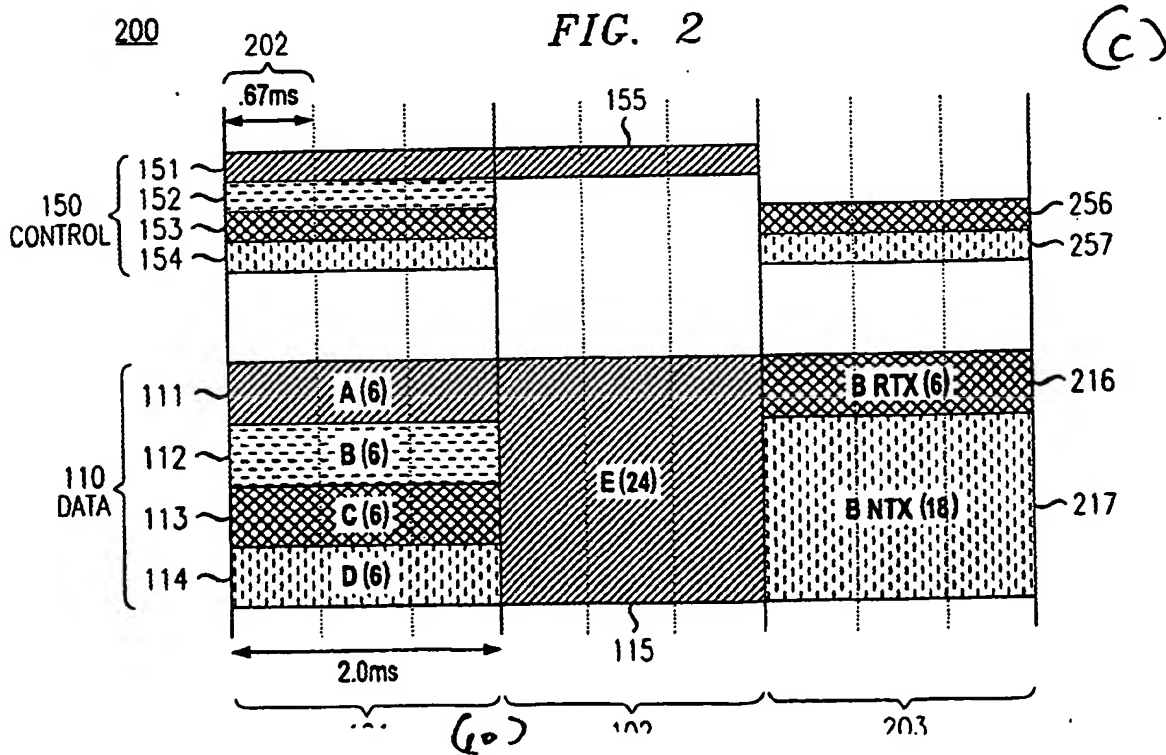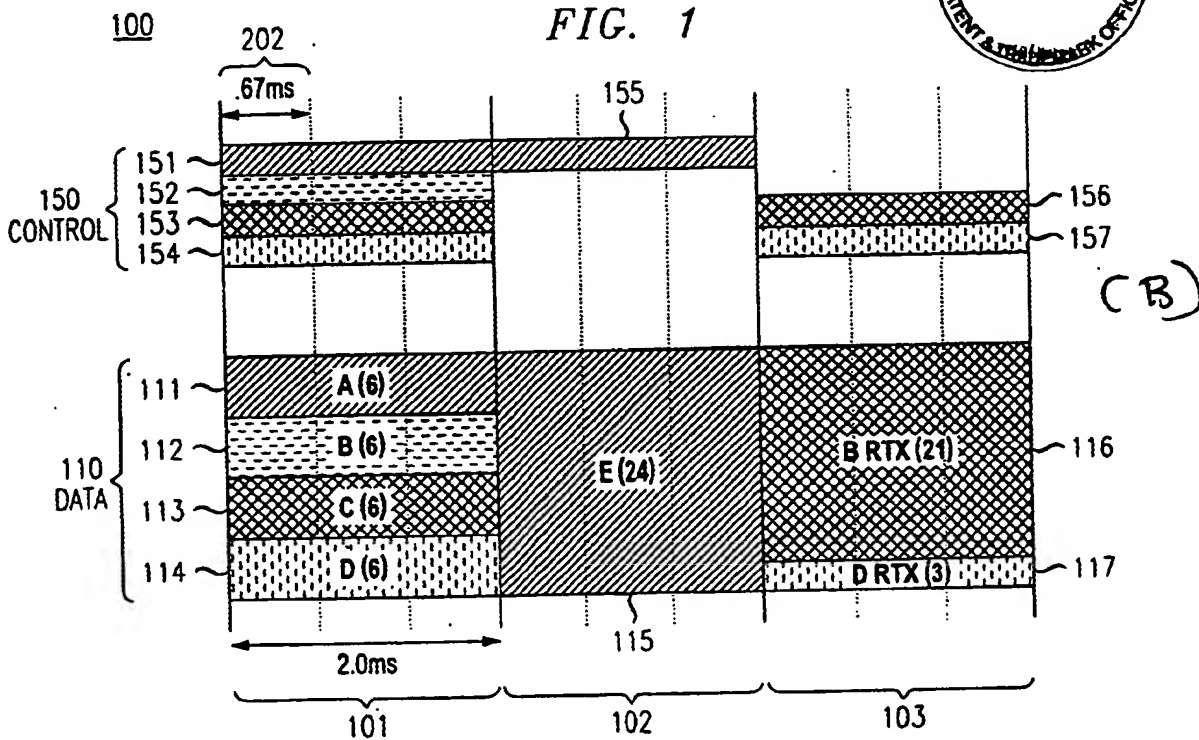
in a fixed length frame, sending a fixed duration retransmission of a previous transmission in the code domain,

wherein a transmission format used for the retransmission is variable.

18. (Original) The method according to claim 17, wherein the transmission format is defined by parameters including number of codes, modulation, and coding.
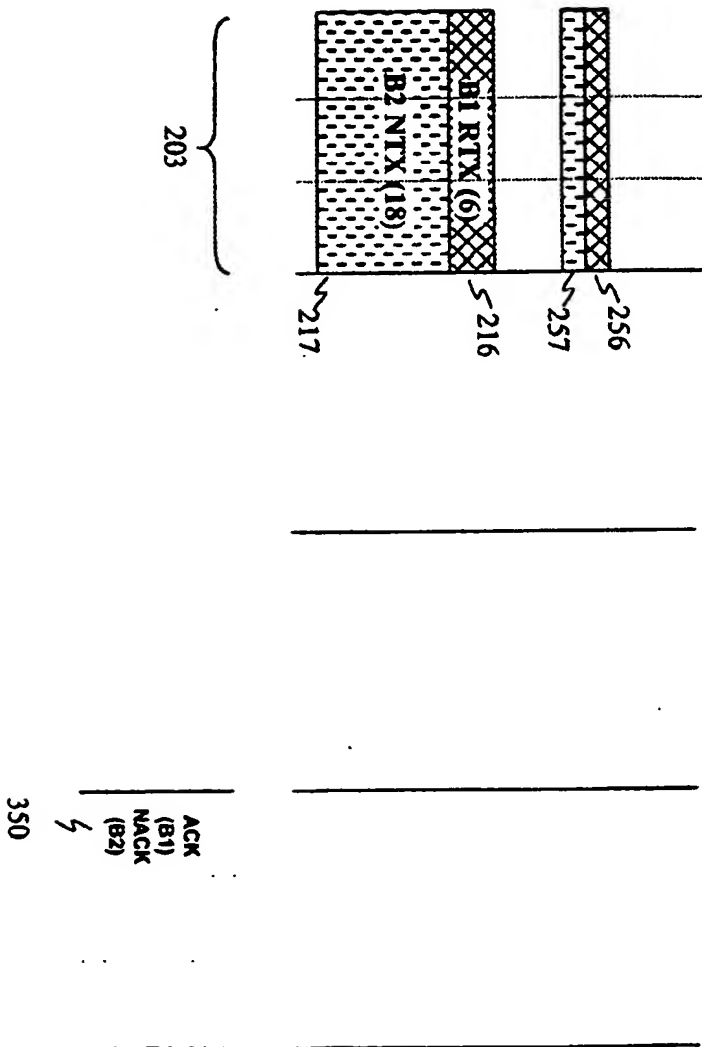
19.   (Original)   The method according to claim 18, wherein the transmission format is varied by changing one or more of the parameters.

20.   (Original)   The method according to claim 7, further comprising the step of transmitting a multi-level acknowledgement/negative acknowledgement (ACK/NACK) in response to multiple transmissions that occur in the same frame for the same user.

A. DAS 13-17-14-1

Appendices
(B) + (C)

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1/2

FIG. 1

100

202
.67ms

155

(B)

150 CONTROL
- 151
- 152
- 153
- 154

156
157

110 DATA
- 111 — A (6)
- 112 — B (6)
- 113 — C (6)
- 114 — D (6)

E (24)

B RTX (21) — 116
D RTX (3) — 117

2.0ms

115

101   102   103

FIG. 2

200

(C)

202
.67ms

155

150 CONTROL
- 151
- 152
- 153
- 154

256
257

110 DATA
- 111 — A (6)
- 112 — B (6)
- 113 — C (6)
- 114 — D (6)

E (24)

B RTX (6) — 216
B NTX (18) — 217

2.0ms

115

(D)   102   203

203

B1 RTX (6)

B2 NTX (18)

217

216

257

256

350

ACK
(B1)
NACK
(B2)

FIG. 3